PROCEEDINGS OF THE NUTRITION SOCIETY

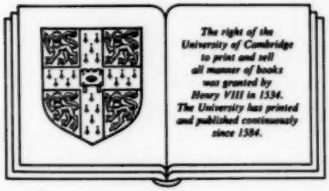
EDITED FOR THE NUTRITION SOCIETY

R. F. GRIMBLE
Proceedings of the English Group

J. QUARTERMAN
Proceedings of the Scottish Group

ROY H. SMITH
Chairman of the Editorial Board

VOLUME 46, 1987



CAMBRIDGE UNIVERSITY PRESS

CAMBRIDGE · LONDON · NEW YORK

PUBLISHED BY

THE SYNDICS OF THE CAMBRIDGE UNIVERSITY PRESS

The Pitt Building, Trumpington Street, Cambridge CB2 1RP

32 East 57th Street, New York, NY 10022, USA

10 Stamford Road, Oakleigh, Melbourne 3166, Australia

© The Nutrition Society 1987

Printed in Great Britain by Lamport Gilbert Printers Ltd

Wantage Road, Reading, England

CONTENTS OF VOLUME 46, 1987

(All rights reserved)

PAGES

Nutritional Aspects of Free Radicals *(Symposium Proceedings: Four Hundred and Twentieth Scientific Meeting)*

SLATER T. F., CHEESEMAN K. H., DAVIS M. J., PROUDFOOT K. & XIN W. Free radical mechanisms in relation to tissue injury 1–12
HALLIWELL BARRY Free radicals and metal ions in health and disease 13–26
WILLSON R. L. Vitamin, selenium, zinc and copper interactions in free radical protection against ill-placed iron 27–34
CHAN HENRY W.-S. Oxygen free radicals in food 35–41
DIANZANI M. U. The role of free radicals in liver damage 43–52
GOLDEN M. H. N. & RAMDATH D. Free radicals in the pathogenesis of kwashiorkor 53–68
MULLER D. P. R. Free radical problems of the newborn 69–75
JACKSON M. J. Muscle damage during exercise: possible role of free radicals and protective effect of vitamin E 77–80

Nutrient Metabolism and the Central Nervous System *(Symposium Proceedings: Four Hundred and Twenty-second Scientific Meeting)*

WILLIAMSON DERMOT H. Brain substrates and the effects of nutrition 81–87
MATTHEWS DAVID R. & CLARK ANNE Neural control of the endocrine pancreas 89–95
POSNER BARRY I. Insulin interaction with the central nervous system: nature and possible significance 97–103
YORK DAVID A. Neural activity in hypothalamic and genetic obesity 105–117
DOCKRAY G. J. Peptides of the gut and brain: the cholecystokinins 119–124
ANIL M. H. & FORBES J. M. Neural control and neurosensory functions of the liver 125–133
TRAYHURN P. & ASHWELL MARGARET Control of white and brown adipose tissues by the autonomic nervous system 135–142
LEATHWOOD PETER D. Tryptophan availability and serotonin synthesis 143–156

Nutrition and Reproduction *(Symposium Proceedings: Four Hundred and Twenty-fourth Scientific Meeting)*

INTRODUCTION 157–158
STEINER ROBERT A. Nutritional and metabolic factors in the regulation of reproductive hormone secretion in the primate 159–175
KIRKWOOD R. N., CUMMING D. C. & AHERNE F. X. Nutrition and puberty in the female 177–192
FORBES J. M. Voluntary food intake and reproduction 193–201
LOUDON ANDREW Nutritional effects on puberty and lactational infertility in mammals: some interspecies considerations 203–216
HOCKING P. M. Nutritional interactions with reproduction in birds 217–225

SELLER MARY J. Nutritionally induced congenital defects 227–235
WHITAKER ELAINE M. Obesity and reproduction 237–247
MELLOR D. J. Nutritional effects on the fetus and mammary gland during pregnancy 249–257

Famine *(Discussion: formed part of the Four Hundred and Twenty-sixth Scientific Meeting)*

WATERLOW J. C. Introductory remarks 259–261
CUTLER P. Early warning of famine: a red herring? 263–266
SEAMAN J. The limits to the use of international aid as a means of securing improvements in food production and nutrition 267–272
NABARRO DAVID Teaching programme staff to identify likely food shortages and to tackle their consequences 273–279
CLAY E. J. European food aid as a tool for relief and development in Sub-Saharan Africa 281–300
ØRSKOV E. R. The role of livestock in Africa: are livestock occasionally contributing to famine? 301–308
General discussion 309–319

Guest Lecture *(presented at the Four Hundred and Thirty-fourth Scientific Meeting)*

CARE A. D. Placental transfer of calcium to the ovine fetus and its regulation 321–329

Nutrition and Cardiovascular Disease *(Symposium Proceedings: Four Hundred and Twenty-seventh Scientific Meeting)*

DODSON P. M. & HORTON R. C. The nature of atheroma 331–336
GALTON DAVID J. The genetics of atherosclerosis 337–343
BETTERIDGE JOHN Nutrition and platelet function in atherogenesis 345–359
RECKLESS J. P. D. Can nutrition favourably affect serum lipids? 361–366
RIFKIND BASIL M. Diet, cholesterol and coronary heart disease: the Lipid Research Clinics Program 367–372
KAPLIN NORMAN M. Non-pharmacological treatment of hypertension 373–377

Application of Biotechnology to Livestock Production *(Symposium Proceedings: Four Hundred and Twenty-ninth Scientific Meeting)*

SHEWRY PETER R. & KREIS MARTIN Biotechnology and improvement of feeds 379–385
STOKES CHRISTOPHER R. Biotechnology and animal health 387–391
HART I. C. Biotechnology and production-related hormones 393–405
HESPELL ROBERT B. Biotechnology and modifications of the rumen microbial ecosystem 407–413
PARKER D. S. & ARMSTRONG D. G. Antiobiotic feed additives and livestock production 415–421

ABSTRACTS OF COMMUNICATIONS

Four Hundred and Twenty-eighth Scientific Meeting

TURTON J., KEEFE S., HICKS R. M. & GWYNNE J. Vitamin A and synthetic retinoids induce gastrointestinal proliferation and gastric hyperkeratosis; similarities in the action of retinoids and epidermal growth factor 2A

CHENG K. N., PACY P. J., DWORZAK F., FORD G. C., HUNTER S. & HALLIDAY D. Regulation of muscle protein metabolism in man as measured by the forearm model 3A

PACY P. J., WEBSTER J. D., ISAACS G., HUNTER S. & GARROW J. S. The effect of aerobic exercise on subsequent 24 h resting metabolic rate in normal male subjects 4A

SANDERS T. A. B., LOVAT L., MISTRY M., UPTON KARINA & SULLIVAN D. R. Influence of a mackerel diet on plasma lipoproteins and platelet function 5A

HURREN C. A. & STOCKLEY L. The percentage contribution of foods to the nutrient composition of diets of schoolchildren and adults 6A

STOCKLEY L., BROADHURST A. J. & KOTECHA S. Nutrient and food intakes in Caucasian and Gujarati men in North London 7A

FEHILY ANN M., YARNELL J. W. G. & BUTLAND BARBARA Diet and ischaemic heart disease in the community: the Caerphilly study 8A

REID V. & MULCAHY R. Six year compliance with dietary advice in cardiac patients 9A

JADIDI N., EDWARDS-WEBB J. D., OWEN R. W. & GURR M. I. Effect of dietary saturated and polyunsaturated fats on faecal excretion of cholesterol and its catabolites in rabbits 10A

KEY FIONA B. & MATHERS J. C. Response of rat caecal metabolism to varying proportions of white and wholemeal bread 11A

BOLTON-SMITH CAROLINE & GIBNEY M. J. The effect of a dietary supplement of marine oil in healthy volunteers on platelet lipids, platelet function and platelet plasma membrane fluidity 12A

BOLTON-SMITH CAROLINE, GIBNEY M. J., GALLAGHER P. J. & HILLIER K. The effect of dietary fish oil on immune-complex-induced atherosclerosis in rabbits 13A

GIBNEY M. J., MALONEY MARY & SHELLY EMER The Kilkenny Health Project: patterns of food intake in individuals consuming low-, moderate- and high-fat diets 14A

DUGGAN M. B. Fetal growth in low birth weight Nigerian babies 15A

XIMENES R., COX M., TOMKINS A. M. & COLLINS K. Energy expenditure in vaccination, infection and controlled hyperthermia 16A

HINDS ALISON & JUDD PATRICIA A. The composition of macrobiotic diets 17A

LEAN M. E. J. & MURGATROYD P. R. Defective thermogenic response to mild-cold exposure in type II diabetes and Cushing's disease 18A

LEAN M. E. J. & DIXON A. K. Abdominal adipose tissue distribution in diabetes, Cushing's syndrome and phaeochromocytoma: a computed tomography index for brown adipose tissue activity? 19A

DEBOLT S. P., CARSWELL N., MICHAELIS IV O. E. & TULP O. L. Long-term effects of fructose consumption on adipose tissue cellularity and glycaemic status in non-insulin dependent diabetic rats 20A

MATHERS J. C., MCNEILL J. & WEIR SARAH M. Relations between dietary intake and urinary excretion for sodium and potassium 21A

DODSON P. M., BEEVERS M., HALLWORTH R., WEBBERLEY M. J., FLETCHER R. F. & TAYLOR K. G. Sodium and blood pressure in the hypertensive type II diabetic: randomized blind, controlled and crossover studies of moderate Na restriction and Na supplementation 22A

SHEPHERD R., FARLEIGH C. A., ATKINSON, C. & PRYOR J. S. The effects of haemo-dialysis on salt and sweet taste 23A

YOUNG A. & LEVIN R. J. The effects of glucose feeding during starvation on rat jejunal secretion 24A

CRANWELL P. D., FOLTMANN B., NEWPORT M. J. & HOWARTH G. L. Basal and pentagastin-induced gastric acid and milk-clotting enzyme secretion in pigs from birth to 4 weeks of age 25A

FOLTMANN B., CRANWELL P. D., NEWPORT M. J. & HOWARTH G. L. Ontogeny of pig gastric proteases; observations on fetal, stillborn, unsuckled newborn, suckled and growing pigs 26A

TRAYHURN PAUL & WUSTEMAN MONICA C. Sympathetic activity in brown adipose tissue during lactation in mice 27A

Four Hundred and Thirtieth Scientific Meeting

ANIL M. H., MBANYA J. N., SYMONDS H. W. & FORBES J. M. Dose-related effects on hay intake of acetate infused into the rumen of lactating cows 29A

KHAN M. A. S., TOPPS J. H. & BROADBENT P. J. Influence of different levels of dietary energy on the performance of cows suckling two calves 30A

MERCER S. W. & WILLIAMSON D. H. Acute changes in mammary gland blood flow, lipogenesis and circulating insulin levels during refeeding of starved lactating rats 31A

ENGKU AZAHAN E. A. & FORBES J. M. Food intake and carcass composition of chickens given glucose in the drinking water 32A

RUSBY A. A. & FORBES J. M. Food intake of intact and vagotomized chickens infused with lysine and glucose into the hepatic portal vein 33A

GERAERT P. A., MACLEOD M. G., JEWITT T. R. & ANDERSON JULIE Energy and nitrogen metabolism in genetically fat and lean chickens 34A

BATES P. C. & HOLDER A. T. The anabolic effects of growth hormone and thyroxine on tissue growth in Snell dwarf mice 35A

BROWN G., HUNT V., WAN J. & GRIMBLE R. F. The differing responses of zinc and protein metabolism to *Escherichia coli* endotoxin in rats fed on diets containing maize, coconut and fish oils 36A

DAWSON J. M., BRUCE C. I., LAMMIMAN M. J., BUTTERY P. J., GILL E. M. & BEEVER D. E. The use of [^{3}H]leucine as a marker for microbial protein synthesized in the rumen 37A

BEEVER D. E., GILL E. M., EVANS R. T., GALE D. L. & WILTON J. C. The effect of fishmeal supplementation of grass silage on nitrogen metabolism in growing cattle 38A

YHOKHA A. & BUTTERY P. J. The metabolism of L- [4,5-^{3}H]leucine labelled fish-meal protein by rumen micro-organisms in vitro 39A

ROWE J. B., AITCHISON E. M. & MCDONALD C. L. Feed antibiotics and buffers to control rumen lactic acid: 1. dose rates 40A

AITCHISON E. M., MCDONALD C. L., CASSON P. & ROWE J. B. Feed antibiotics and buffers to control rumen lactic acid: 2. pre-dosing 41A

AITCHISON E. M., RALPH I. G. & ROWE J. B. Evaluation of avoparcin, flavomycin and lasalocid for wool production 42A

CLAPPERTON J. L., STEEL W. & BANKS W. The effect of Actaplanin on the composition of cow's milk 43A

CROMPTON L. A. & LOMAX M. A. Effect of undernourishment and subsequent refeeding on hind-limb muscle protein metabolism in growing lambs 44A

CROMPTON L. A. & LOMAX M. A. The relation between hind-limb muscle protein metabolism and growth hormone, insulin, thyroxine and cortisol in growing lambs 45A

HARPER JANE M. M. & BUTTERY P. J. Effects of recombinant-DNA-derived growth factors on cultured sheep muscle cells 46A

METCALF J. A., VERNON R. G., FLINT D. J. & WEEKS T. E. C. Insulin binding to skeletal muscle microsomes during lactation in sheep 47A

PELL J. M., BLAKE L. A., BUTTLE H. L., JOHNSSON I. D., SIMMONDS A. D. & MORRELL D. J. Insulin-like growth factor-1 and growth hormone in sheep 48A

NEWBOLD C. J., THOMAS P. C. & CHAMBERLAIN D. G. The effect of sodium bicarbonate on nitrogen metabolism in the rumen of sheep fed on silage-based rations 49A

Four Hundred and Thirty-second Scientific Meeting

QUARTERMAN J., ANDERSON J. H. & MCDONALD ALISON The effects of fasting and fibre supplements on some metal-binding properties of rat intestinal mucus 52A

LAWSON MARGARET S., BUNKER VALDA W. & CLAYTON BARBARA E. The effect of dietary fibre on apparent absorption of zinc, copper, iron and manganese in the elderly 53A

SEAL C. J. & MATHERS J. C. N^+,K^+-ATPase-dependent zinc transfer by everted gut sacs from rats given different amounts and types of dietary fibre 54A

BARCLAY M. N. I., MACPHERSON A., TAYLOR C. & AULD W. H. R. Selenium concentration and glutathione peroxidase activity in human blood from patients with coronary heart disease 55A

MORRISON J. N. & BREMNER I. Effect of maternal zinc supply on metallothionein levels in blood and liver of rat pups 56A

BREMNER I., MORRISON J. N. & WOOD ANNE M. Metallothionein levels in blood cells and urine of zinc-deficient and endotoxin-treated rats 57A

HARRISON LYDIA & D'MELLO J. P. F. Zinc deficiency, amino acid imbalance and brain catecholamine concentrations in the chick 58A

LAVIS GRAHAME J., OFEI VIDA & BENDER DAVID A. Differences in the zinc content of different regions of the toe-nail 59A

LYNCH S. M., CARVILLE D. G. M. & STRAIN J. J. Copper deficiency and anti-oxidant status in male and female rats 60A

MCMASTER DOROTHY, EVANS A. E., MCCRUM EVELYN E., KERR M. MACF. & PATTERSON C. C. Belfast MONICA project first population survey: cholesterol, zinc, copper and selenium 61A

STAFFORD WINIFRED, SMITH R. G., HENERY ENID C., LEWIS SUSAN & O'RORKE K. Estimation of leucocyte zinc and serum Zn and copper in geriatric long-stay patients 62A

HENERY E. C., SMITH R. G. & STAFFORD W. Dietary intake of zinc and copper in long-stay geriatric patients 63A

BERROW MICHAEL L. Cobalt, copper and molybdenum in Scottish soils 64A

VAN DORST SHEILA, THORNTON IAIN & WANG WUYI Selenium pathways in the soil–plant–animal system 65A

Brebner Jocelyn, Suttle N. F. & Thornton I. Assessing the availability of ingested soil cobalt for the synthesis of vitamin B_{12} in the ovine rumen 66A

Paterson Jessie E. & MacPherson A. Microbicidal activity of neutrophils of cobalt-deficient and repleted calves 67A

Suttle N. F., Jones D. G., Woolliams J. A. & Woolliams C. Copper supplementation during pregnancy can reduce perinatal mortality and improve early growth in lambs 68A

Ke Y. & Symonds H. W. The effect of molybdate compounds on the biliary excretion of copper by sheep 69A

Cossack Zafrallah T. & van den Hamer Cornelis J. A. Effect of endogenous status of zinc on copper absorption and its application to the treatment of Wilson's disease 70A

Clarkson J. P., Elmes M. E. & Jasani B. Copper retention in the human liver: a histochemical and immunocytochemical study 71A

Haywood S., Batt R. M. & Loughran M. Intracellular events in the liver and kidney of copper-loaded rats in relation to Cu-storage diseases in man and animals 72A

Chacko A. & Cummings J. H. Nitrogen losses from the human small bowel: obligatory losses and the effect of diet 73A

Bender David A., Clifford Elizabeth, McCreanor Gwyn M. & Smith Anthony D. The metabolism of a high intake of nicotinamide in choline-deficient rats 74A

Clague M. B., Wright P. D., Dale G., McKenzie P., Hopley P. & Earnshaw M. Comparison of Novomine, a locally manufactured amino acid solution, with commercially available solutions, in a District General Hospital 75A

Richardson R. A., Rogers P., Carr K., Dawson F. & Garden O. J. Relation between osmolality of the diet and diarrhoea in enteral feeding 76A

Richardson R. A., Shenkin A. & Garden O. J. Liver function test abnormalities during enteral nutrition 77A

Sly M. R., du Bruyn D. B., Robbins D. J., van der Walt W. H. & van der Merwe J. N. Mechanisms contributing to the rachitogenic properties of maize 78A

Four Hundred and Thirty-third Scientific Meeting

Sian M. S. & Greenhalgh R. M. Smoking habit, carboxyhaemoglobin level and obesity in patients with peripheral arterial disease 80A

Geissler C., Dzumbira T. & Noor I. Daily energy expenditure; evaluation of a factorial field technique against continuous calorimetry 81A

Geissler C., Miller D. & Shah M. Lower daily metabolic rates in post-obese than in lean subjects 82A

Robinson S. M. & York D. A. A comparison of the thermic responses to two 2MJ meals provided as a liquid formula or a solid food 83A

Saini Jocelyn R., Morgan Jane B. & Kovar I. Z. Very low birth weight infants given total parenteral nutrition: longitudinal balance studies of nitrogen and energy 84A

Kennedy N., Badaloo V. & Jackson A. Metabolic adaptation to a marginal energy intake 85A

Brady Caitriona & Gibney Michael J. Detection of secretory IgA antibodies to common food protein in stimulated human parotid saliva 86A

HINDS ALISON & SANDERS T. A. B. Effect of increasing levels of dietary eicosapentaenoic (20:5*n*–3) and docosahexaenoic (22:6*n*–3) acids on lymphocyte phospholipid composition and cell-mediated immunity in the mouse 87A

WILLIAMS CELIA A. & MACDONALD I. Serum glucose and insulin response to various levels of glucose, maltose and two maltodextrins in men and women 88A

GLEESON M. & MAUGHAN R. J. Acute effect of exercise on ascorbate content of plasma lymphocytes 89A

ROTHWELL NANCY J., STOCK MICHAEL J. & TEDSTONE ALISON E. Thermic responses to spontaneous meals in the rat 90A

ROTHWELL NANCY J. & STOCK MICHAEL J. Effect of the level and type of fat intake on energy balance and thermogenesis in the rat 91A

ROTHWELL NANCY J., STOCK MICHAEL J. & SUDERA DEEPAK K. Thermogenic sensitivity to adrenergic agonists of brown adipocytes from 'cafeteria'-fed rats 92A

JEPSON M. M. & MILLWARD D. J. Influence of protein deficiency on the metabolic response to endotoxin in young rats 93A

TIRAPEGUI J., BATES P. C., DALAL S. D., YAHYA Z. H. & MILLWARD D. J. Effect of corticosterone and energy restriction on IGF-1 levels, cartilage matrix synthesis and bone growth in the rat 94A

WOODWARD C. J. H. & EMERY P. W. The activity of cytochrome *c* oxidase (*EC* 1.9.3.1) in corticosterone-treated rats 95A

CHOO J. J. & EMERY P. W. Effect of an anabolic steroid (Durabolin) on body composition of rats treated with insulin 96A

SANDARADURA SANOJA, BENDER A. E. & GAHAN P. B. Effect of high-fibre diets on faecal DNA and mucosal cell proliferation in the rat 97A

TREUHERZ JOYCE & TOMKINS ANDREW Evaluating a district food and health policy: the Bloomsbury experience 98A

CADE JANET, BARKER D. J. P., MORRIS JULIE & MARGETTS BARRIE Nutrient intakes in three English towns 99A

KEMM J. R., DOUGLAS J. & SYLVESTER V. Eating patterns of Afro-Caribbean mothers in Birmingham 100A

RATCLIFFE B., SMITH M. W., MILLER B. G. & BOURNE F. J. The effect of soya-bean protein on intestinal morphology, absorption and enzyme activity in gnotobiotic pigs at 3 weeks of age 101A

NUNES C. SIMOES, RERAT A., VAUGELADE P. & VAISSADE P. Qualitative and quantitative intestinal absorption and hepatic metabolism in conscious pigs. 1. Glucose and amino nitrogen 102A

RERAT A., NUNES C. SIMOES, VAUGELADE P. & VAISSADE P. Qualitative and quantitative intestinal absorption and hepatic metabolism in conscious pigs. 2. Lactate, pyruvate, ammonia-nitrogen and urea 103A

RERAT A., NUNES C. SIMOES, MENDY P. & ROGER L. Absorption kinetics of amino acids from amino acid mixtures of the same composition perfused into the small intestine in the free form or as enzymic milk protein hydrolysates in conscious pigs 104A

Four Hundred and Thirty-fourth Scientific Meeting

PEDRICK M., HICKS R. M. & TURTON J. Evaluation of three commercially available vitamin-A-deficient diets 106A

GHOSHAL DEBASIS, ROY SAMIR & BASU SUBIR Studies on a bone-marrow-derived bio-immunomodulator in improving immune response in immunosuppressed, water-soluble-vitamin-deficient mice 107A

JAMES S. & BARKER HAIDEE D. Effect of clenbuterol on the growth and carcass composition of hypophysectomized rats in the presence or absence of growth hormone 108A

LEVIN R. J., YOUNG A., SHINN SARAH & HILL SARAH Starvation enhances the secretory responses of stripped rat colon and ileum to acetyl choline in vitro 109A

HAGEMEISTER H., SCHMITZ M., SCHOPPE INA & BARTH C. A. Absorption of oral bovine lactoferrin in the neonatal and adult pig 110A

BARTH C. A., SCHOLTISSEK JOHANNE, FRIGG M. & HAGEMEISTER H. Biotin supply by large bowel bacteria: evidence from intracaecal avidin 111A

CARSON M. T., UNSWORTH E. F. & PEARCE J. Effects of rumen butyrate infusion on blood ethylmalonic acid concentration in sheep 112A

LATYMER EVA A. & LOW A. G. Tissue incorporation and excretion of ^{14}C in pigs after injection of [1-^{14}C]- or [2-^{14}C]-propionic acid into the caecum 113A

MARTIN P. A. & THOMAS P. C. Reduction in the saturated fatty acid content of cow's milk fat through diet formulation 114A

QUARTERMAN J. & TAM KATY The effect of lead and phospholipids on serum cholesterol 115A

JORDAN K., SHORTT H. S. & MATHIAS P. M. Adaptation of a rapid, single test-tube, fluorometric method for the estimation of selenium in foods and food products 116A

REDDY SHEELA & SANDERS T. A. B. Plasma phospholipid fatty acid composition in men of Asian and European descent 117A

GOLDBERG G. R., DAVIES H. L., MURGATROYD P. R. & PRENTICE A. M. Overnight metabolic rate in men and women 118A

WILLIAMS C., NUTE M. G. & WALKER M. P. Influence of carbohydrate supplementation on running performance 119A

LOWELL JANET P., MORRISON VALERIE, LAI C. K. W., KHIN C. C., MOWAT N. A. G. & BRUNT P. W. Fibre, dietitians and irritable bowel syndrome 120A

HARRISON R. A., POPE S., CLARK C. G. & TOMKINS A. M. Evaluation of gastroplasty in the management of severe obesity 121A

WEIR A. M., RICHARDSON R., GARDEN O. J. & SHENKIN A. The effects of pre-operative nutritional status on post-operative complications in head and neck surgery 122A

PONTING G. A., WARD H. A., TEALE J. D., HALLIDAY D. & SIM A. J. W. Somatomedin C, insulin, and protein synthesis in patients receiving bio-synthetic human growth hormone and undergoing surgery or during total parenteral nutrition 123A

MCNEILL G., RIVERS J. P. W. & PAYNE P. R. Energy requirements of Indian men: overestimation by new international method 124A

PRENTICE A. M., COLE T. J., FOORD F., LAMB W. H. & WHITEHEAD R. G. The Keneba prenatal supplementation programme: updated analysis after 4 years of intervention 125A

CADE JANET, BARKER D. J. P., MARGETTS BARRIE & MORRIS JULIE The three-town diet study: food intake 126A

ROWLAND I. R., MALLETT A. K., WARD F., WALKER R. & COATES M. E. The effect of diet on *N*-nitrosoproline excretion in man 127A

ORAM E.-L. The effect of the menstrual cycle on patterns of nutrient intake 128A

STROUD MICHAEL A. Did Scott simply starve? Lessons from 'The footsteps of the Scott Antarctic expedition' 129A

Four Hundred and Thirty-sixth Scientific Meeting

OCKHUIZEN TH., VAN DE POL H., VEENSTRA J., VAN DOKKUM W. & WEDEL M. Moderate alcohol consumption affects lipid metabolism and blood haemostasis 132A
LARVIN M. & MCMAHON M. J. The relation of alcohol intake and diet to the changing pattern of acute pancreatitis 133A
MAHESWARAN RAVI, GILL JASWINDER S. & BEEVERS D. GARETH Recent alcohol intake and blood pressure 134A
WHICHELOW MARGARET J. Which foods contain dietary fibre? The beliefs of 7351 respondents in the Health and Lifestyle Survey 1984–85 135A
PERSAUD C., FORRESTER T. & JACKSON A. A. Glycine: limiting amino acid for rapid growth 136A
BADALOO V., EMOND A., VENUGOPAL S., SERJEANT G. & JACKSON A. A. The effect of splenectomy on whole body protein turnover in homozygous sickle cell disease 137A
WILLIAMS C., WALKER M. P., NUTE M. G., JACKSON J. & BROOKS S. Fat metabolism during prolonged exercise: influence of carnitine supplementation 138A
WOOTTON S. A. & MCWHIRTER J. Influence of acute food restriction on rabbit skeletal muscle sarcoplasmic reticulum Ca^{2+}/Mg^{2+} ATPase (*EC* 3.6.1.3) 139A
GRIMBLE R. F. & HOLDEN DENISE Responses of lean and obese Zucker rats to two types of *Escherichia coli* endotoxin 140A
BURSZTYN PETER G. & GILLBE ZOE The effects of alcohol on blood pressure in rabbits 141A

Four Hundred and Thirty-eighth Scientific Meeting

HARDMAN A. E. & WILLIAMS C. Increased dietary carbohydrate and endurance during single-leg cycling 143A
ANDERSON A. S., LEAN M. E. J. & COUBROUGH H. Towards NACNE: practical nutrition education in a high-risk area 144A
CHOUDHRY M., KAUR K. & CHOUDHRY S. Activity pattern of rural women from Rajasthan, India 145A
DUNCAN RODERICK Energy intake, expenditure and balance of the transglobe expedition Antarctic crossing party 146A
DUNCAN RODERICK Energy balance in dog sledgers and skidoo drivers in Antarctica: a comparison 147A
MACLEOD M. G., JEWITT T. R. & ANDERSON JULIE E. M. Energy utilization and physical activity in intubated and self-fed male domestic fowl 148A
GOODLAD J. S. & MATHERS J. C. Digesta flow from the ileum and transit time through the caecum of rats given diets containing graded levels of peas 149A
WELCH R. W., PETERSON D. M. & SCHRAMKA B. Cholesterolaemic and intestinal responses to oat bran fractions in chicks 150A
LEAN M. E. J., SUTHERLAND F. & SUTHERLAND H. W. Fatness and fat distribution related to glucose tolerance in pregnancy 151A

CARVILLE D. G. M. & STRAIN J. J. The effect of copper deficiency on oxygen free radical defence mechanisms in rats fed on saturated or polyunsaturated fat 152A
PONTING G. A. & SIM A. J. W. The efficacy of standard intravenous feeding regimens 153A

INDEXES

Index of Authors 423
Index of Subjects 431